REMARKS

I. INTRODUCTION

Claims 6 and 19 were previously cancelled. Claims 2-4 have been cancelled. Claims 20 and 21 were previously withdrawn. Claims 1, 5, 11, and 25 have been amended. Support for the amendments can be found throughout the specification. Claim 26 has been added. Support for the new claim can be found throughout the specification. Thus, claims 1, 5, 7-18, and 22-26 remaining pending in the present application. No new matter has been added. In view of the above amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable.

II. THE 35 U.S.C. § 102(b) REJECTIONS SHOULD BE WITHDRAWN

The Examiner has rejected claims 1-5, 7-9, 17, and 22 under 35 U.S.C. § 102(b) as unpatentable over JP 3-14678 (Ito).

Ito describes a method for manufacturing a polyester fiber into which a cyclodextrin group compound or a cyclodextrin group compound enclosed with an enhancer is permeated. (See Ito, p. 2). A swelling liquid containing a cyclodextrin group compound or a cyclodextrin group compound enclosed with an enhancer is added to an unstretched polyester fiber. After permeation, the unstretched fiber is swollen and stretched. (See Id., pp. 2-3). The unstretched fiber is swelled to 10% volume or more using the liquid. If the concentration of the swelling agent is less than 10 wt% or the amount of swelling agent being given is less than 5 wt%, the cyclodextrin group compound has difficulty permeating into the fiber. (See Id., p. 3).

Claim 1 recites "dispersed within the fibers, an effective malodor scavenging amount of at least one of (i) particles of zinc, wherein the amount of particles of zinc in the fiber material is in a range from about 0.015 to 1 wt.-%, based on the fiber material, and wherein the particles of

zinc are essentially free of corresponding oxides and the particles of zinc are nanosized particles having an average diameter in a range of 40 to 250 nm and (ii) a cyclodextrin material, wherein the cyclodextrin is free of an inclusion complex compound and the cyclodextrin comprises an α-cyclodextrin, a β-cyclodextrin, a γ-cyclodextrin or mixtures thereof, having pendant moieties or substituents that render the cyclodextrin compatible with the fiber material, wherein the malodor scavenging amount is physically mixed into a batch to be manufactured into the fibers of the fiber material." As amended, this recitation of claim 1 differs from the polyester fiber disclosed in Ito.

The polyester fiber of Ito is manufactured by permeating a cyclodextrin compound into it. (See Id., p. 2). Ito describes a range of the swelling agent in wt% that will achieve a preferable permeation. (See Id., p. 3). Claim 1 of the present application recites "the malodor scavenging amount is physically mixed into a batch to be manufactured into the fibers of the fiber material." Those skilled in the art will understand that dispersing the cyclodextrin compound using physical means is different than permeating. Specifically, the physical means is an active process whereas permeation is a passive process. One specific physical means used in the present application is extrusion. (See Specification, p. 19, ¶ [0068]). Those skilled in the art will understand that extrusion involves an application of pressure and heat (*e.g.*, active).

Applicants would also like to direct the Examiner's attention to a passage in Ito. Specifically, Ito states, "However, since the cyclodextrin group compound breaks down when heated, it is difficult to knead it into synthetic fibers being manufactured by melt-spinning, and if it is only attached to the fiber surface, it is easily peeled off, so that the above-mentioned effect of the cyclodextrin group compound is not sustained." (See Ito, p. 2). Ito claims to solve this problem by permeating the cyclodextrin into the polyester fiber without applying heat (in order to avoid decomposition of the cyclodextrin). (See Ito, p. 2). Once the cyclodextrin has been permeated into the fiber, the fiber is stretched. In contrast, the present application refers to the use of a cyclodextrin material having pendant moieties or substituents that render the cyclodextrin compatible with the fiber material, as recited in claim 1. These chemically modified

cyclodextrins are not comparable to conventional cyclodextrins having no such substituents. Specifically, one main difference is in the thermal stability. That is, the compatible cyclodextrins according to the present application provide a thermal stability which a conventional or unmodified cyclodextrin does not have, such as the cyclodextrin of Ito. (See Specification, pp. 12-13, ¶ [0048]; p. 13, ¶ [0050]). Applicants note that a blend of thermoplastic material and conventional (*i.e.*, incompatible) cyclodextrin may lead to a degradation of the cyclodextrin at extrusion temperatures thereby producing a characteristic burnt odor during extrusion. Incompatible cyclodextrins can also cause substantial meltfractions in the extrudate which are detectable by visual inspection. Thus, the present application includes pendant moieties or substituents, thereby making the cyclodextrin thermally stable. Applicants submit that the mere fact that the present invention solves the problem explicitly noted in Ito clearly differentiates the present application from Ito.

Applicants further note that, as discussed above, Ito first produces the fibers and then permeates the cyclodextrin into the fibers. That is, the fibers already exist by the time the cyclodextrin is introduced. In direct contrast, the present application mixes the cyclodextrin and/or zinc into the thermoplastic material (*i.e.*, a batch) and then the fibers are produced, as recited in claim 1. That is, the fibers are produced after the introduction of the cyclodextrin.

Additionally, Applicants note that the cyclodextrin of the present application is "free of an inclusion complex," as recited in claim 1. That is, the cyclodextrin includes the moieties or substituents that render the cyclodextrin compatible without any inclusion complex. In contrast, the cyclodextrin of Ito does include an inclusion complex. Those skilled in the art understand that to permeate cyclodextrin into a polyester fiber (as suggested by Ito), a swelling liquid (*e.g.*, dimethylformamide, tetrahydrofuran, acetone (See Ito, p. 3)) is necessary. Furthermore, the swelling liquids of Ito would form inclusion complexes with the cyclodextrins. Therefore, Ito is not free of an inclusion complex unlike the present application. Support for this statement may be found in the following pieces of literature: Hedges A. (1992) "Cyclodextrin: production, properties and applications" in "Starch hydrolysis products" by Schenk F. Habeda R. (Eds),

VCH, New York, pp. 319-333; and Rendleman J. (1997) "Enhancement of cyclodextrin production through use of debranching enzymes," Biotechnol. Appl. Biochem. 26: pp. 51-61.

Thus, for all the reasons stated above, it is respectfully submitted that Ito does not disclose or suggest "dispersed within the fibers, an effective malodor scavenging amount of at least one of (i) particles of zinc, wherein the amount of particles of zinc in the fiber material is in a range from about 0.015 to 1 wt.-%, based on the fiber material, and wherein the particles of zinc are essentially free of corresponding oxides and the particles of zinc are nanosized particles having an average diameter in a range of 40 to 250 nm and (ii) a cyclodextrin material, wherein the cyclodextrin is free of an inclusion complex compound and the cyclodextrin comprises an α-cyclodextrin, a β-cyclodextrin, a γ-cyclodextrin or mixtures thereof, having pendant moieties or substituents that render the cyclodextrin compatible with the fiber material, wherein the malodor scavenging amount is physically mixed into a batch to be manufactured into the fibers of the fiber material," as recited in claim 1.

Accordingly, Applicants respectfully request that the Examiner should withdraw the 35 U.S.C. § 102(b) rejection of claim 1. Because claims 2-5, 7-9, and 17 depend from and, therefore, include the limitations of claim 1, it is respectfully submitted that these claims are also allowable.

Claim 22 recites "[h]ygienic article comprising a fiber material according to claim 1." Thus, Applicants respectfully submit that this claim is also allowable for at least the reasons stated above with reference to claim 1 and the Examiner should withdraw the 35 U.S.C. § 102(b) rejection for this claim.

The Examiner rejected claims 1-5, 7-11, 13, 16-18, and 22-25 under 35 U.S.C. § 102(b) as unpatentable over U.S. Pat. No. 5,429,628 (Trinh). Claim 1 was recited above.

Trinh describes compositions and articles which minimize odor caused from body fluids through the incorporation of an effective amount of cyclodextrin, having a particle size of less than 12 microns. (See Trinh, abstract). Dry cyclodextrin/perfume complex powder is sprinkled, mixed or distributed onto a fluid absorbent material. (See Id., col. 21, ll. 11-13). In one preferred embodiment, the cyclodextrin/perfume complex is attached to the substrates. (See Id., col. 21, ll. 26-29). In another preferred embodiment, the cyclodextrin/perfume complex is applied to the fluid absorbent material since drying of those materials allow adherence. (See Id., col. 21, ll. 33-38).

As amended, claim 1 differs from the compositions and articles disclosed in Trinh. Trinh discloses adhering/attaching cyclodextrin to a fiber's surface as a coating after the fiber has been manufactured. Accordingly, one main difference between the present invention and Trinh is the manner in which the cyclodextrin is introduced into or onto the fibers. (See 5/2/06 Office Action, p. 7). In the present application, compatible cyclodextrin is dispersed into the fiber material before the fibers are produced, since "the malodor scavenging amount is physically mixed into a batch to be manufactured into the fibers of the fiber material," as recited in claim 1. (See Specification, p. 19, ¶ [0068]). In contrast, according to Trinh, the cyclodextrin is coated onto a hydrophobic fiber after the fiber is produced. As a consequence, Trinh does not disclose the cyclodextrin physically mixed into the fibers. Those skilled in the art will understand that this process of manufacturing differs from that used in the present application. Applicants further note that the abstract of Trinh does not disclose particles of cyclodextrin "dispersed throughout" a fiber material, contrary to the Examiner's citation. (See 5/02/06 Office Action, p. 3, ll. 16-17). In addition, Applicants respectfully submit that the Examiner's contention that Trinh discloses that "the cyclodextrin may be used in an amount of 1% by weight of the fibers" (See Trinh, example 7) is incorrect. Specifically, the moisture content of the cyclodextrin material used in Trinh cannot be about 1% by weight since the cyclodextrin is applied with aqueous carriers. Therefore, those skilled in the art understand that since cyclodextrin is hygroscopic, the cyclodextrin picks up water in an amount which is much higher than 1%.

Thus, it is respectfully submitted that Trinh does not disclose or suggest "dispersed within the fibers, an effective malodor scavenging amount of at least one of (i) particles of zinc, wherein the amount of particles of zinc in the fiber material is in a range from about 0.015 to 1 wt.-%, based on the fiber material, and wherein the particles of zinc are essentially free of corresponding oxides and the particles of zinc are nanosized particles having an average diameter in a range of 40 to 250 nm and (ii) a cyclodextrin material, wherein the cyclodextrin is free of an inclusion complex compound and the cyclodextrin comprises an α-cyclodextrin, a β-cyclodextrin, a γ-cyclodextrin or mixtures thereof, having pendant moieties or substituents that render the cyclodextrin compatible with the fiber material, wherein the malodor scavenging amount is physically mixed into a batch to be manufactured into the fibers of the fiber material," as recited in claim 1.

Accordingly, Applicants respectfully request that the Examiner should withdraw the 35 U.S.C. § 102(b) rejection of claim 1. Because claims 2-5, 7-11, 13, and 16-18 depend from and, therefore, include the limitations of claim 1, it is respectfully submitted that these claims are also allowable.

Claim 22 recites "[h]ygienic article comprising a fiber material according to claim 1." Thus, Applicants respectfully submit that this claim is also allowable for at least the reasons stated above with reference to claim 1 and the Examiner should withdraw the 35 U.S.C. § 102(b) rejection for this claim. Because claims 23-25 depend from and, therefore, include the limitations of claim 22, it is respectfully submitted that these claims are allowable as well.

The Examiner rejected claims 1-3, 7, 8, 11-16, 18, 22, and 25 under 35 U.S.C. § 102(b) as unpatentable over JP 55-115440 (Otani). Claim 1 was recited above.

Otani describes an acrylonitrile polymer molded article containing a zinc powder as a filler. (See Otani, p. 1). The acrylonitrile polymer of Otani comprises 0.1 to 30% by weight of zinc powder. (See Id., p. 2). Otani discloses that when the content of a zinc powder is less than

0.1% by weight, it is not possible to expect sufficient antifungal and antibacterial effects from the resultant molded article. (See Id., p. 3). The zinc particles are dispersed on the acrylonitrile polymer by homogeneously dispersing them into the molded article, dispersing them so as to have an island-in-sea structure, or dispersing them so as to have a sheath-core structure. (See Id., p. 4). In this way, when orienting a zinc powder along the direction of fiber axis in a state separated from the fiber cross section, a polymer having a favorable affinity to the zinc powder may be used as a carrier. (See Id., p. 4).

Claim 1 differs from the acrylonitrile polymer disclosed in Otani. Otani has a preferable range of zinc powder from 1 to 20% by weight. Otani specifically discloses that a zinc powder of less than 0.1% by weight is insufficient for antifungal and antibacterial effects. That is, Otani teaches away from the fiber material disclosed in the present application. Specifically, the fiber material of the present application may contain zinc particles as low as 0.015 wt% and still be effective, as recited in claim 1. (See Specification, p. 12, ¶ [0046]).

Applicants also maintain the previous argument that Otani incorporates "a zinc powder" into acrylonitrile fibers and that the zinc powder of Otani is not zinc that is free of corresponding oxides (*i.e.*, elemental/reactive zinc), as recited in claim 1. Otani states that the zinc powder is incorporated into the acrylonitrile polymer article at an amount of up to 30 wt.-%. (See Otani, p. 2). Those skilled in the art understand that the incorporation of 30 wt.-% of highly reactive metal powder (*i.e.*, zinc free of corresponding oxides) is practically impossible. In support of this argument, Applicants would like to direct the Examiner to U.S. Pat. No. 5,320,843 (Raheja). Raheja discloses that metal ions like ions of zinc have antibacterial activity. (See Raheja, col. 2, ll. 48-56). Furthermore, the Examiner states that "Otani et al. recognize zinc oxides as an entirely different type of filler than the zinc powder used in the fibers." (See 5/02/06 Office Action, p. 8, ll. 13-14). However, in response to this statement, Applicants note that Otani uses the terms "zinc powder" and "zinc oxide" interchangeably (See Otani, example 2) suggesting that Otani does not differentiate between zinc oxide and zinc powder. (See Otani, pp. 8-10). The foregoing observation clearly contradicts the Examiner's assumption that Otani differentiates

between zinc oxide and zinc powder or that "Otani et al. speak of zinc oxide as a material that is entirely different from zinc powder." (See 5/02/06 Office Action, p. 8, ll. 14-17). Applicants respectfully submit that the disclosure of Otani must be seen as a whole rather than citing isolated sentences and combining them to provide a new teaching that allegedly anticipates the claimed subject matter.

Furthermore, Applicants have included the further amendment that "the particles of zinc are nanosized particles having an average diameter in a range of 40 to 250 nm," as recited in claim 1. Otani discloses that the "zinc powder" is contained in the acrylonitrile polymer at a particle size of "1μm or less" (*i.e.*, 1,000 nm or less). (See Otani, p. 3). Furthermore, a zinc particle size range is provided as being "about 0.5 to 2 μm" (*i.e.*, 500 to 2,000 nm). (See Otani, p. 5). From the foregoing two text passages, it becomes clear that Otani does not disclose nanosized particles of zinc, specifically nanosized particles ranging from 40 nm to 250 nm with respect to the average diameter, as recited in claim 1.

Thus, it is respectfully submitted that Otani does not disclose or suggest "dispersed within the fibers, an effective malodor scavenging amount of at least one of (i) particles of zinc, wherein the amount of particles of zinc in the fiber material is in a range from about 0.015 to 1 wt.-%, based on the fiber material, and wherein the particles of zinc are essentially free of corresponding oxides and the particles of zinc are nanosized particles having an average diameter in a range of 40 to 250 nm and (ii) a cyclodextrin material, wherein the cyclodextrin is free of an inclusion complex compound and the cyclodextrin comprises an α-cyclodextrin, a β-cyclodextrin, a γ-cyclodextrin or mixtures thereof, having pendant moieties or substituents that render the cyclodextrin compatible with the fiber material, wherein the malodor scavenging amount is physically mixed into a batch to be manufactured into the fibers of the fiber material," as recited in claim 1.

Accordingly, Applicants respectfully request that the Examiner should withdraw the 35 U.S.C. § 102(b) rejection of claim 1. Because claims 2-3, 7, 8, 11-16, and 8 depend from and,

therefore, include the limitations of claim 1, it is respectfully submitted that these claims are also allowable.

Claim 22 recites "[h]ygienic article comprising a fiber material according to claim 1." Thus, Applicants respectfully submit that this claim is also allowable for at least the reasons stated above with reference to claim 1 and the Examiner should withdraw the 35 U.S.C. § 102(b) rejection for this claim. Because claim 25 depends from and, therefore, includes the limitations of claim 22, it is respectfully submitted that this claim is allowable as well.

III. THE 35 U.S.C. § 102(b)/103(a) REJECTIONS SHOULD BE WITHDRAWN

The Examiner has rejected claim 12 under 35 U.S.C. § 102(b) or § 103(a) as unpatentable over Ito. The Examiner also rejected claim 12 under 35 U.S.C. § 102(b) or § 103(a) as unpatentable over Trinh. Ito and Trinh was discussed above.

The Examiner has correctly stated that Ito and Trinh does not explicitly teach the limitation of low moisture content. The Examiner has attempted to cure this deficiency with an obviousness statement using Ito and an obviousness statement using Trinh. However, neither Ito nor Trinh cures the above described deficiencies. Because claim 12 depends from and, therefore, includes all the limitations of claim 1, it is respectfully submitted that claim 12 is allowable for at least the reasons stated above and the Examiner should withdraw the 35 U.S.C. § 102(b) or § 103(a) rejection for this claim.

IV. THE 35 U.S.C. § 103(a) REJECTIONS SHOULD BE WITHDRAWN

The Examiner has rejected claims 12-16 under 35 U.S.C. § 103(a) as unpatentable over Trinh in view of U.S. Pat. No. 5,776,842 (Wood). Trinh was discussed above.

The Examiner has correctly stated that Trinh does not teach all the possible substituents that the cyclodextrin material can comprise. The Examiner has attempted to cure this deficiency with Wood. However, Wood does not cure the above described deficiencies of Trinh. The Examiner has also correctly stated that Wood does not explicitly teach the limitation of low moisture content for their cyclodextrin material. The Examiner has attempted to cure this deficiency stating that it would be reasonable to presume that this limitation is inherent to the combination of using Trinh in view of Wood. However, as discussed above, Wood does not cure the deficiencies of Trinh. Because claims 12-16 depend from and, therefore, include all the limitations of claim 1, it is respectfully submitted that these claims are also allowable and the Examiner should withdraw the 35 U.S.C. § 103(a) rejection for these claims.

CONCLUSION

In view of the above amendments and remarks, it is respectfully submitted that all the presently pending claims are in condition for allowance. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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